

17329145



---

**MPX/OS VERSION 3  
OPERATOR'S GUIDE**

---

**CONTROL DATA®  
MP-32  
COMPUTER SYSTEMS**



# LIST OF EFFECTIVE PAGES

Page	Revision
Title Page	-
ii	-
iii through viii	A
1-1	A
2-1/2-2	A
3-1 through 3-6	A
4-1	A
A-1	A
B-1 through B-4	A
C-1 through C-2	A
Comment Sheet	A

Page	Revision



## PREFACE

This manual provides basic operating information for the operating system MPX/OS which executes on the Control Data MP-32 Computer System.

This manual is intended to serve operators and programmers who do not require detailed information about MPX/OS.

The publications listed below are related publications available through the nearest Control Data Corporation sales office.

<u>Publication</u>	<u>Publication Number</u>
MP-60 Computer System Family Reference Manual	14306500
Control Data MPX Computer System MPX/OS Reference Manual	17329125
MPX/OS V3.0 Installation Handbook	17329115

This product is intended for use only as described in this document. Control Data cannot be responsible for the proper functioning of undescribed features or parameters.



## TABLE OF CONTENTS

1.0	INTRODUCTION . . . . .	1-1
2.0	CONFIGURATION . . . . .	2-1
3.0	SYSTEM INTIALIZATION . . . . .	3-1
3.1	Power-on Procedure . . . . .	3-1
3.2	Load Micromemory of System . . . . .	3-3
3.2.1	Ready Flexible Disk . . . . .	3-3
3.2.2	Ready Mass Storage (Unit 0) . . . . .	3-3
3.3	Loading the Emulator . . . . .	3-3
3.3.1	Loading the Emulator from Flexible Disk . . . . .	3-3
3.3.2	Loading the Emulator from Mass Storage . . . . .	3-4
3.4	Execute MPX/OS Initialization Programs . . . . .	3-4
3.5	System Reinitializaton . . . . .	3-6
3.6	Panic Dump . . . . .	3-6
4.0	OPERATOR COMMUNICATIONS . . . . .	4-1

## APPENDIXES

A	ILLUSTRATION OF PANEL . . . . .	A-1
B	ERROR MESSAGES . . . . .	B-1
C	ITS VERSION 2.0 COMMAND SUMMARY . . . . .	C-1

## FIGURES

2-1	Typical MP-60 System Configuration . . . . .	2-2
3-1	Flow Diagram of System Initialization . . . . .	3-2
A-1	MP-32 Basic Panel . . . . .	A-1
C-1	Sample Magnetic Tape . . . . .	C-1

## TABLE OF CONTENTS (Contd)

### TABLES

B-1	MPX/OS Resident Bootstrap Program . . . . .	B-2
B-2	MPX System Initialization Program . . . . .	B-3



## INTRODUCTION

1

This manual defines the detailed procedures necessary to initialize the Control Data MP-32 computer system and load the MPX/OS Version 3 operating system on this hardware, and defines the operating procedures to be utilized once MPX/OS is loaded.

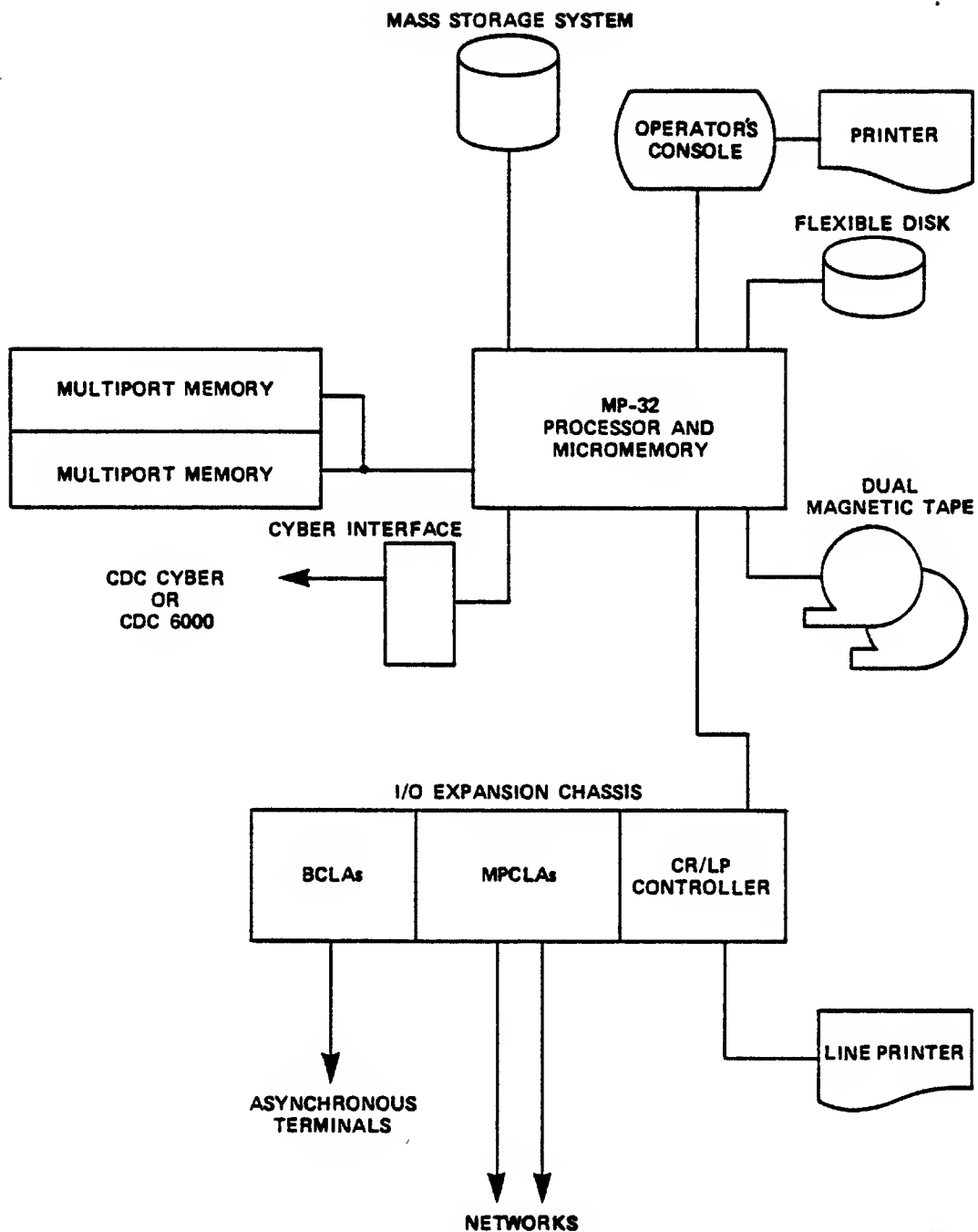
The MPX/OS Version 3 operating system consists of various software components that provide the user with the ability to conveniently define, control, and execute an entity called a job. Each job is composed of one or more tasks. Tasks execute in paged program states and may use priorities from 1 through 511. Priorities 1 through 9 and 256 through 511 are reserved specifically for real-time tasks. Non-real-time task priorities are 10 through 255. Priority 0 is reserved for running the system task IDLE.



MPX/OS operates with the following minimum configuration:

- o 65K word central memory
- o One MP-32 central processor unit (CPU)
- o One MP-32 I/O operator console CRT
- o Twenty million bytes of mass storage
- o Standard input device - card reader or flexible disk drive
- o Standard output device - line printer

Figure 2-1 illustrates a typical MP-32 system configuration.



System initialization may be defined as a series of steps used to load and ready MPX/OS on the MP-32 computer system. To initialize the MP-32 system, the operator must perform the following procedures. (See figure 3-1 for flow diagram of system initialization.)

- 1) Power-on processor and peripherals.
- 2) Load micromemory of MP-32.
- 3) Load MPX bootstrap program.
- 4) Execute MPX initialization program.

This section describes the initialization procedures in detail.

### 3.1 Power-on Procedure

The following sequence of steps pertain to the power-on of CPU and peripheral devices.

- 1) Power-on the MP-32 Processor chassis. (Uppermost chassis in equipment cabinet.)
- 2) Power-on the Multiport Memory chassis. (Other chassis in equipment cabinet.)
- 3) Power-on the I/O Expansion chassis.
- 4) Power-on all peripheral equipment.

Power-on is complete at this point. The next step is to load the micromemory.

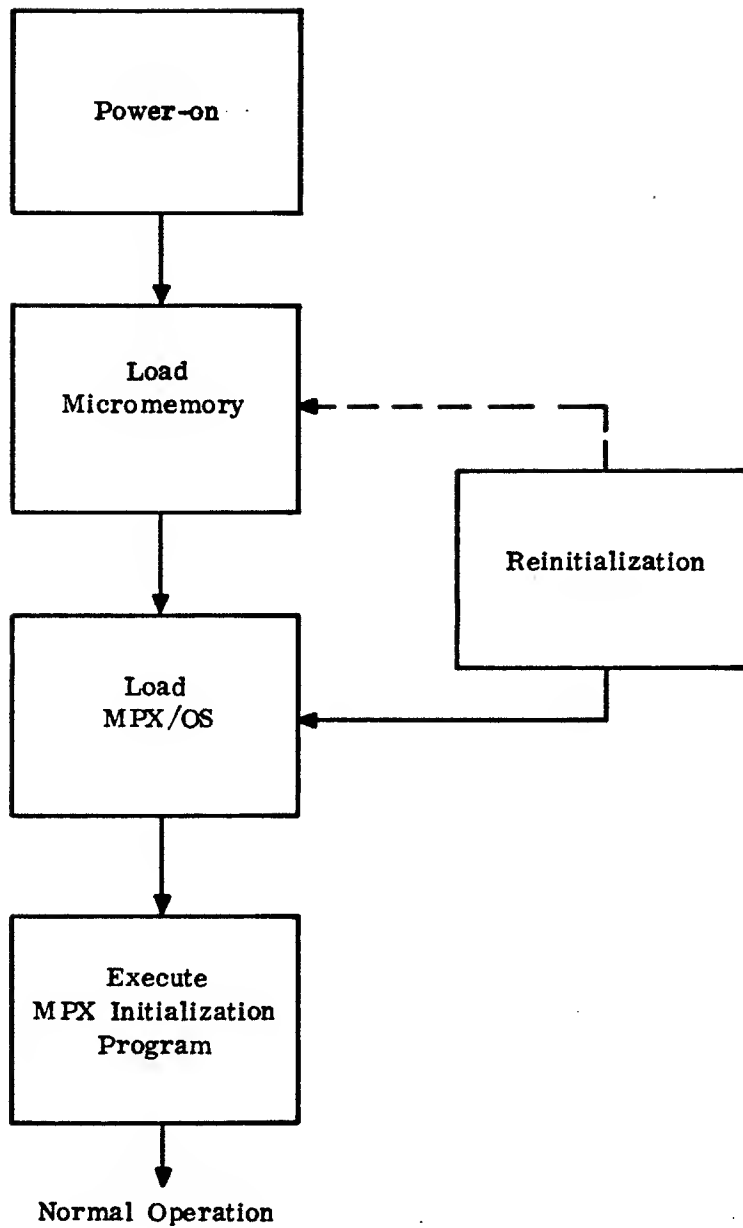


Figure 3-1. Flow Diagram of System Initialization

### 3.2 Load Micromemory of System

Micromemory of the MP-32 is loaded with the firmware for emulating the MP-60. Each CPU can be loaded from various hardware devices. The following procedures are for readying the hardware devices used for loading micromemory.

#### 3.2.1 Ready Flexible Disk

- 1) Pull handle on top of unit away from mainframe to open plastic door.
- 2) Drop flexible disk (floppy) with label facing toward mainframe into opening.
- 3) Close plastic door.

#### 3.2.2 Ready Mass Storage (Unit 0)

- 1) Perform unit power-on.
- 2) Mount appropriate disk pack.
- 3) Press START button on unit.
- 4) START and READY lights will be on when disk is ready for use.

### 3.3 Loading the Emulator

The procedures for loading micromemory are described in the following subparagraphs.

#### 3.3.1 Loading the Emulator from Flexible Disk

If the emulator needs to be loaded or restored from the flexible disk:

- 1) Ready the flexible disk drive with the EMULATOR WITH AUTOLOAD flexible disk.
- 2) Press the MASTER CLEAR button on the MP-32 deadstart panel (appendix A).
- 3) Press the DEADSTART button on the MP-32 deadstart panel (appendix A).

- 4) When the lights for Display Code 0, Micro Run, and Macro Run are on, the micromemory is loaded. The autoloader portion of the emulator will then read the MPX/OS bootstrap program from the system disk pack mounted on mass storage Unit 0 and the first two lines of the initialization sequence (paragraph 3.4) will appear on the operator's console. (If a different message appears on the operator's console, reference appendix B for instructions.)

### 3.3.2 Loading the Emulator from Mass Storage

If the emulator is to be loaded or restored from Mass Storage:

- 1) Ready Mass Storage with system disk pack.
- 2) Ready the flexible disk drive with the QWIKSTART flexible disk.
- 3) Same as 3.3.1, Step 3.
- 4) Same as 3.3.1, Step 4.

### 3.4 Execute MPX/OS Initialization Programs

After bootstrap of the initialization programs from the system device, the operator selects versions of the MPX/OS operating system and library. The following is a normal sequence of actions:

<u>Message</u>	<u>Action</u>
MPX System Boot	None.
What Resident? xx	Enter edition number of desired resident version and press CARRIAGE RETURN.
Checksum: XXXXXXXX	Verify the checksum matches for the appropriate resident. If it does not match, contact systems analyst.
Corrections? y/n	Type N and press CARRIAGE RETURN if no corrections are to be made.



MessageAction

Testing available memory.

None.

Generating Label File directory.

None.

What Machine? a/b

Enter appropriate machine identifier and press CARRIAGE RETURN.

What Max Security? x

Enter desired security level (0-7) and press CARRIAGE RETURN.

What Library? xx

Enter edition number of desired library version and press CARRIAGE RETURN.

Date? mmddyy

Enter date and press CARRIAGE RETURN.

Time? hhmm

Enter time and press CARRIAGE RETURN.

Initializing System Tasks.

None.

When MPX/OS has been loaded, but before MPX/OS starts execution, the system queues may require recovery. Recovery is required when an audible bell is sounded at the operator's console and the operator finds jobs/files in the queue display (reference ITS Version 2.0 Reference Manual for displaying queues). The following options are available for recovery of the queues:

OptionOperator Type-in

1) Recover all queues

A,\*0,SYSQS

2) Reject all queues

R,\*0,SYSQS

3) Reject selected jobs/files

R,\*0,SYSQS,seqnum

This will reject only the job/file of sequence number seqnum. This response will also require response 1.)

The MPX/OS is now loaded and is ready for execution. Refer to section 4.0 for operating procedures.

If an operational error is encountered during the initialization process, additional error messages are output on the console. Refer to appendix B for a list of error messages and appropriate action.

### 3.5 System Reinitialization

If the MPX/OS must be reinitialized, one of two procedures may be executed. Generally, reinitialization does not require micromemory to be reloaded; therefore, it begins by loading the MPX/OS bootstrap program and continues through the remaining steps of system initialization. However, system reinitialization may also begin with the load micromemory procedure and be followed by normal system initialization flow, but unless required is not normally used. Reinitialization without reloading micromemory can be accomplished at the operator's console by the following:

- 1) Ensure disk is ready.
- 2) Master Clear by typing ESC, '?'.  
3) Deadstart by typing ESC, 'I', '@'.
- 4) Complete remainder of initialization procedure.

#### NOTE

When using the operator's console entries, the shift key may be required (for example, to get 'I' rather than 'i').

### 3.6 Panic Dump

If the MPX/OS operating system stops, the system analyst may need a panic dump to diagnose the problem. The operator obtains a panic dump as follows:

- 1) Mount a tape on Unit 0.
- 2) Press LOAD.
- 3) When the tape reaches load point (TAPE LOADED light on), press READY.
- 4) The system will automatically start the dump if one is feasible. If not feasible, this information should be reported to the system analyst.

The operator may force a panic dump if the system is still marginally operable as follows:

- 1) Mount a tape on Unit 0, and load.
- 2) Type ]F OCF  
Set 0,0
- 3) Ready the tape.
- 4) The system will automatically start the dump.

A panic dump tape is interpreted by the SYSDUMP utility as described in the MP-60 Software Tools User's Manual (17329105).



## OPERATOR COMMUNICATIONS

4

Once MPX/OS Version 3 has been initialized, the operator can initiate and control the execution of jobs through the use of the Interactive Terminal Subsystem (ITS). The operator can interface directly to MPX/OS via the commands described in the ITS Version 2.0 Reference Manual (17329140), and may also communicate with tasks established by those jobs via the interface provided by the ITS. The commands accepted by user defined tasks (applications) are specific to the applications and are described in the appropriate user's manual(s). Reference these manuals for details on the communication available between the operator and MPX/OS Version 3. Appendix C contains a summary of the ITS commands.



## APPENDIX A

### ILLUSTRATION OF PANEL

Appendix A contains an illustration of the MP-32 basic panel.

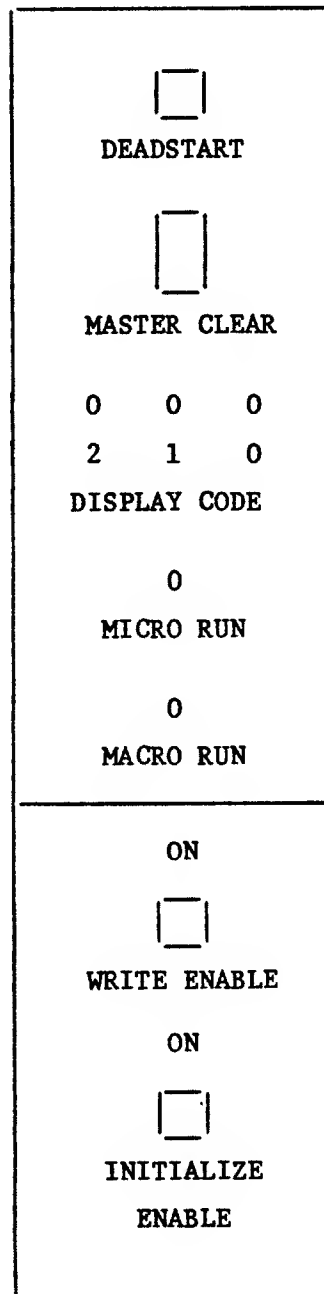


Figure A-1. MP-32 Basic Panel





## APPENDIX B

### ERROR MESSAGES

Appendix B contains a list of error messages by initialization phase. Phase 1 includes the MPX/OS resident bootstrap program and its related error messages. Phase 2 includes the MPX system initialization program and its related error messages.

If an error message that is not listed should occur during an initialization phase (phase 1 or 2), notify a systems analyst.

The following error messages may require a response. Use the CARRIAGE RETURN key to terminate responses.

TABLE B-1. MPX/OS RESIDENT BOOTSTRAP PROGRAM

Message	Cause	Action
CANNOT FIND MPX-RESIDENT FILE XX IN LABEL FILE	No resident with specified edition	Reinitiate autoloading.
CHECKSUM ERROR ON LABEL FILE LABEL	Possible bad system pack	Retry initialization procedure and consult systems analyst.
CHECKSUM ERROR ON MPX- RESIDENT FILE LABEL	Possible bad system pack	Retry initialization procedure and consult systems analyst.
CHECKSUM ERROR ON RESIDENT		Same as above.
CHECKSUM ERROR ON SYSTEM DEVICE LABEL	Possible bad system pack	Same as above.
DEVICE LABEL IS NOT SYSTEM DEVICE LABEL	Wrong disk pack mounted	Correct error and restart initialization.
DISK ADAPTER ERROR		Retry initialization procedure and consult customer engineer.
FIRST LABEL ON LABEL FILE NOT LABEL FILE LABEL		Consult systems analyst.
MPX-RESIDENT FILE XX IS NOT IN ABSOLUTE FORMAT		Consult systems analyst.

TABLE B-2. MPX SYSTEM INITIALIZATION PROGRAM

Message	Action
BAD LABEL FILE ENTRY	Consult systems analyst.
CANNOT FIND MPX-LIBRARY FILE XX IN LABEL FILE	Enter different library edition and press CARRIAGE RETURN.
CHECKSUM ERROR ON SLAVE N, TYPE A TO ABANDON AND R TO RETRY	Slave, CPU N, returned a checksum error to the master in acknowledging a deadstart command. Type A and press CARRIAGE RETURN to bypass this slave (eliminate from system), or type R and press CARRIAGE RETURN to try again.
CHECKSUM ERROR ON SYSTEM-DEVICE OR LABEL-FILE	Consult systems analyst.
DISK ADAPTER ERROR	Retry initialization procedure and consult customer engineer.
LABEL-FILE LABEL NOT FIRST BLOCK	Consult systems analyst.
MEMORY PARITY (P) = XXXX	Consult customer engineer.
MEMORY REJECT (P) = XXXX	Consult customer engineer.
NO JOB MANAGER OR JOB LOADER FOUND	Consult systems analyst.
NO RESPONSE FROM SLAVE N, TYPE A TO ABANDON AND R TO RETRY	Slave, CPU N, did not acknowledge deadstart command from master in allotted time. Type A and press CARRIAGE RETURN to ignore this slave, or take corrective action. Type R and press CARRIAGE RETURN to retry.
NOT ENOUGH MEMORY FOR GLOBAL COMMON REQUIREMENTS	Consult systems analyst.
SYSTEM01 NOT ONLINE	Consult systems analyst.



## APPENDIX C

### DESCRIPTION OF MAGNETIC TAPE POSITIONING FOR MICROMEMORY OR DIAGNOSTIC LOAD

Perform the following steps to position magnetic tape:

- 1) Ready magnetic tape (refer to page 3-4).
- 2) Tape positioning can now begin. (The following description will use figure C-1 as an example.)
- 3) Determine what is to be loaded (for example, IOC or CPU micromemory, IOC or CPU diagnostics). This appendix will describe IOC diagnostic load from magnetic tape.

#### IOC Diagnostic Load From Magnetic Tape

- 1) Tape must be positioned to the beginning of the record containing the IOC diagnostic. (In figure C-1, this would be the second record.)
- 2) Set appropriate switches on the IOC (refer to IOC LOAD from magnetic tape, page 3-10 steps 1 through 5) to load from magnetic tape.
- 3) Press MASTER CLEAR; then press DEADSTART. The first record on the tape has been read. The tape is now in position to load the second record (the desired record for this example).
- 4) Refer to IOC LOAD from magnetic tape page starting at step 6 for remaining load procedures.

IOC MICROMEMORY	4,096 32-Bit Absolute Image
IOC DIAGNOSTIC	4,096 32-Bit Absolute Image
CPU MICROMEMORY	4,096 32-Bit Absolute Image
CPU DIAGNOSTIC	4,096 32-Bit Absolute Image

NOTE: Records on the magnetic tape may be created in any order. The above figure is one example of tape creation.

Figure C-1. Sample Magnetic Tape

COMMENT SHEET

TITLE: MP-32 Computer System

.. MPX/OS Version 3 Operator's Guide

PUBLICATION NUMBER: 17329145

REVISION: A

NAME:

COMPANY:

STREET ADDRESS:

CITY:

STATE:

ZIP CODE:

Control Data Corporation welcomes your evaluation of this manual. Please indicate any errors, suggested additions or deletions, or general comments below (please include page number references).

NO POSTAGE STAMP NECESSARY IF MAILED IN U.S.A.

FOLD ON DOTTED LINES AND TAPE

TAPE

TAPE

FOLD

FOLD



NO POSTAGE  
NECESSARY  
IF MAILED  
IN THE  
UNITED STATES

**BUSINESS REPLY MAIL**

FIRST CLASS

PERMIT NO. 8241

MINNEAPOLIS, MINN.

POSTAGE WILL BE PAID BY

**CONTROL DATA CORPORATION**

Systems Technology Division

215 Moffett Park Drive  
Sunnyvale, California 94086



CUT ALONG LINE

FOLD

FOLD